

Abstract of the Disclosure

A method for forming electrically conductive bumps on a semiconductor substrate, or a semiconductor wafer and devices formed by the method are disclosed. In the method, a wafer that has an active surface, a plurality of conductive elements formed on the active surface and a passivation layer insulating the plurality of conductive bumps from each other is first provided. A first metal layer is then sputter deposited on top of the plurality of conductive elements and the passivation layer, followed by stencil printing a plurality of bumps of an insulating material on top of each one of the plurality of conductive elements. The plurality of bumps may be heat treated to a temperature of at least 100°C for a period of at least 10 minutes for stress relief. A second metal layer is then sputter deposited on top of the plurality of bumps and the first metal layer. The first and the second metal layers are then patterned by a photolithographic process and formed by a wet or dry etching process to remove metal layers in areas in-between the plurality of bumps.